

First Named Inventor: William R. Priedeman, Jr.

Application No.: 10/019,160

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REMARKS

Claims 1-37 are pending in this application. The Office Action of February 18, 2004 rejected claims 24 through 37 under 35 U.S.C. § 102(b) as being anticipated by Fan et al., U.S. Patent No. 5,474,719. The Office Action rejected claims 1 through 23 under 35 U.S.C. § 103(a) as being unpatentable over Pomerantz et al., U.S. Patent No. 4,961,154, in combination with Fan.

Claim Rejections Under 35 U.S.C. § 102

Claims 24 through 37 were rejected as being anticipated by Fan. However, Fan does not teach each element of the independent claims 24 and 35. The independent claims each require an alkali-soluble thermoplastic and require that the thermoplastic comprise a carboxylic acid. Because the materials disclosed in Fan do not meet either of these claim limitations, the rejection is improper.

Independent claim 24 recites that the claimed improvement comprises "providing as the solidifiable material an alkali-soluble thermoplastic comprising: a base polymer containing a carboxylic acid." Independent claim 35 recites a three-dimensional object comprised of "an alkali-soluble thermoplastic material comprising: a base polymer containing a carboxylic acid." Thus, independent claims 24 and 35 each contain the limitations of "an alkali-soluble thermoplastic" comprising "a base polymer containing a carboxylic acid."

Fan describes "viscosity reducible", photohardenable compositions for use in solid imaging. (E.g., Col. 5, lines 19-25). The viscosity reducible compositions of Fan are those capable of becoming reduced in viscosity upon application of heat and/or shear stress. (Col. 5, lines 25-29). In the imaging process of Fan, a platform is coated with a liquified photoformable composition in a thin layer. (Col. 6, lines 26-27). After application, the layer is allowed to cool, causing it to increase in viscosity or to solidify. (Col. 6, lines 27-28). Next, the layer is exposed imagewise to radiation, thereby causing a degree of photoformation that substantially decreases the heat liquifiability of the layer where imaged in selected areas. (Col. 6, lines 28-32). Numerous layers are built up in this fashion. (Col. 6, lines 32-38). The mass is then heated, thereby lowering the

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viscosity of the unimaged portions and allowing the excess material to be easily removed, leaving the desired object. (Col. 6, lines 38-44).

In the Office Action, the Examiner asserts that Fan teaches building a three-dimensional object from an alkali-soluble thermoplastic comprising a carboxylic acid. Applicant respectfully disagrees. Fan is directed to the viscous characteristics of photohardenable materials. Fan does not describe any of the materials as being alkali-soluble. Likewise, Fan does not disclose the inclusion of a carboxylic acid in any of its materials. The Examiner has not identified which of the various materials disclosed in Fan is asserted to have the claimed composition. Applicant contends that none of the disclosed materials are alkali-soluble, and that none contain a carboxylic acid.

The disclosed monomers in Fan are acrylates. (See col. 28, line 8-57). Acrylates are carboxylic acid derivatives (esters), but are not themselves acids. Further, acrylates are generally insoluble in aqueous solutions, including alkaline solutions. Other components disclosed for use in the photohardenable compositions of Fan include photoinitiators, pigments, extenders, thermal inhibitors, and adhesion promoters. (See col. 28, line 58-col. 29, line 49). Fan does not disclose the inclusion of a carboxylic acid, it does not disclose an alkali-soluble composition, and it does not provide any teaching that alkali-solubility would be a desirable property of a modeling material.

Because Fan does not teach each limitation recited by independent claims 24 and 35, these claims are not anticipated thereby. Therefore, Applicant respectfully requests notice of the allowability of independent claims 24 and 35 and their dependent claims 25 through 34 and 36 through 37.

Claims Rejections Under 35 U.S.C. § 103

Claims 1 through 23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Pomerantz in combination with Fan. More specifically, the Examiner asserted that Pomerantz teaches building a support structure for a three-dimensional object, and that the claimed support

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structure material is taught by Fan, such that it would have been obvious to use the material of Fan in building the claimed support structure for a three-dimensional object.

Applicant respectfully asserts that claims 1-23 possess inventiveness in view of Fan and Pomerantz. As with independent claims 24 and 35 discussed above, independent claims 1 and 14 each contain the limitations of an alkali-soluble material comprising a base polymer containing a carboxylic acid. As set forth above, Fan fails to teach the use of an alkali-soluble or a carboxylic acid containing material. Pomerantz likewise does not teach the claimed material. Further, Pomerantz does not disclose "dispensing" material in "a predetermined pattern," as is required by claims 1 and 14. Rather, Pomerantz, like Fan, is directed to building up objects by irradiating a layer of a photohardenable liquid. Thus, the combination of references fails to teach or suggest Applicant's claimed process.

Applicant therefore respectfully requests notice of the allowability of independent claims 1 and 14, and their dependent claims 2-13 and 15-23.

Conclusion

Applicant has attempted in earnest to address each issue raised by the Examiner. Applicant respectfully submits that all pending claims 1 through 37 are in condition for allowance and respectfully requests notice of their allowability.


The Commissioner is authorized to charge any additional fees associated with this paper or credit any overpayment to Deposit Account 11-0982.

Any inquiries regarding this application should be directed to Gena M. Chapman at (612) 337-9345.

Respectfully submitted,
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By


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